

# Computational Model and Measurement Tool for Evaluating the Design of Flight Deck Technologies, Phase II

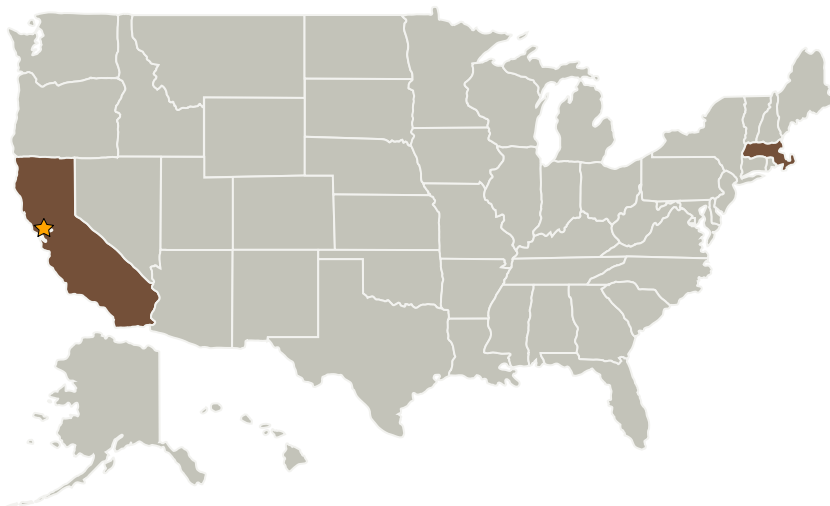
Completed Technology Project (2009 - 2011)



## Project Introduction

The runway safety issue has been on the Most Wanted list of the National Transportation Safety Board since the list's inception in 1990. The FAA has responded by implementing two ground surveillance technologies at major U.S. airports to reduce the risk of runway incursions. However, both technologies route information through air traffic control (rather than directly to pilots), which significantly delays safe responses. Several flight deck technologies that communicate information directly to pilots are currently in development. However, there is a need for tools to rapidly test the flight deck technologies early in the design process and measure their impact on pilot performance prior to implementation. We propose to develop two tools that can be used together or independently to evaluate performance of flight deck technologies aimed at improving runway safety. We will deliver a computational cognitive model (Adaptive Control of Thought-Runway Safety; ACT-RS) that realistically emulates pilot performance, thus reducing the need for human pilots early in the design process. In addition, we will deliver a measurement tool (Performance Measurement (PM) Engine) that can measure the impact of the flight deck technology on the performance of ACT-RS and a human pilot, making it useful across the technology lifecycle.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Ames Research Center (ARC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Aptima, Inc.	Supporting Organization	Industry	Woburn, Massachusetts

Primary U.S. Work Locations	
California	Massachusetts

## Project Transitions

**September 2009:** Project Start**September 2011:** Closed out

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

## Technology Areas

**Primary:**

- TX16 Air Traffic Management and Range Tracking Systems
  - └ TX16.3 Traffic Management Concepts